A.D. 1869, *18th September.* **N° 2714.**

SPECIFICATION

OF

RICHARD SCOTT BURKITT.

PPARATUS FOR THE COMBUSTION OF SMOKE.

LONDON:
INTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY:
PUBLISHED AT THE GREAT SEAL PATENT OFFICE,
25, SOUTHAMPTON BUILDINGS, HOLBORN.
1870.

A.D. 1869, 18th September. N° 2714.

Apparatus for the Combustion of Smoke.

(*This Invention received Provisional Protection only.*)

PROVISIONAL SPECIFICATION left by Richard Scott Burkitt at the Office of the Commissioners of Patents, with his Petition, on the 18th September 1869.

I, Richard Scott Burkitt, of Manchester, in the County of Lancaster, do hereby declare the nature of the said Invention for "Improved Apparatus for Effecting the Combustion of Smoke in Furnaces or Fire-places," to be as follows:—

This Invention relates, firstly, to a mode of conducting or admitting heated air into an air chamber behind the bridge of the furnace in such a way that it is brought to bear directly upon the unconsumed carbon and combustible gases in the smoke, and to cause their immediate combustion or conversion into flame.

Secondly. To the peculiar form and construction of the apparatus employed for such purpose.

Thirdly. To a method of and apparatus for the elimination or absorption of the carbonic acid gas (which is so deleterious to animal and vegetable life), and for the prevention of its passing off into the atmosphere with the heated air and other unconsumed products of combustion.

In carrying out my Invention I propose to use hollow fire-bars, the admission of air to the front end of which is regulated by an air door placed below the ordinary fire-door and actuated as herein-after described. The inner ends of the fire-bars lead into a hollow plate or box formed with an inclined plane at the back of and below the ordinary bridge, the said inclined plane being furnished with perforations or openings provided with a damper, and arranged in such a way as to direct the heated air upwards to meet the smoke and unconsumed gases passing over the bridge, and which are at this point deflected downwards to meet the heated air by means of a fire-brick arch formed inside the flue for that purpose. At a certain distance behind the bridge (say about one-third the remaining length of the flue) I build a wall or screen of fire-clay or other suitable material, having openings or perforations all over its surface for the passage of the gases and other products of combustion, and beyond this again I have a second screen of fire-clay or other material of a dished or conical shape, having only a central opening; and in some instances I propose also to use a third perforated screen of fire-clay or other material similar to the first. The object of these perforated fire-clay screens is that any unconsumed carbon or inflammable gas that may have escaped from the hot-air chamber in passing in a divided state through these screens (which will become red hot) shall be inevitably consumed, and thus entirely prevented from passing off into the atmosphere in the form of smoke. The air door is connected to the damper in the hot-air chamber and also to the fire-door by a catch or otherwise in such a way that the opening of the fire-door to supply fresh fuel shall also open the air door and damper to admit heated air to the air chamber; but the closing of the fire-door leaves the air door and damper open, and they are closed gradually by any suitable hydraulic, pneumatic, or spring apparatus hitherto known and employed for such or similar purposes. After the smoke has been consumed the hot air on its passage to the chimney passes over a tank of water and under or through a spray or shower of lime water, which will eliminate or absorb the carbonic acid gas and leave nothing but pure heated air to pass off by the chimney. In places where it is not convenient or desirable to erect a tall chimney the requiste amount of draught may be created by means of a fan worked by the engine or otherwise.

It will be evident that a slight modification of my Invention is also equally applicable to ordinary and other fire-places.

LONDON:
Printed by George Edward Eyre and William Spottiswoode,
Printers to the Queen's most Excellent Majesty. 1870.